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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/635,004	08/06/2003	Hiroyuki Nakamura	033216M083	7607

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WASHINGTON, DC 20036

EXAMINER
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SUMMONS, BARBARA

ART UNIT	PAPER NUMBER
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2817

DATE MAILED: 10/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/635,004

Applicant(s)

NAKAMURA ET AL.

Examiner

Barbara Summons

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AW

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 8/6/03 & 10/21/03 (Pre-amendments).
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 9, 13-15 and 17 is/are rejected.
- 7) ☒ Claim(s) 5-8, 10-12, 16 and 18-25 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 10/21/03 & 12/9/03.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Information Disclosure Statement/Pre-Amendment***

1. The information disclosure statement and Preliminary Amendment filed 12/9/03 are copies of the information disclosure statement and Preliminary Amendment filed on 10/21/03 with the incorrect serial number. The originals did get scanned into the case and the dates of filing of the IDS and Pre-amendment are considered to be 10/21/03.

### ***Specification***

2. The disclosure is objected to because of the following informalities: On page 31 on lines 1-2, one of the redundant "longitudinal coupled mode type" should be deleted. Similarly, on page 31, on line 16, one of the redundant "longitudinal coupled mode type" should be deleted.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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4. Claims 1 and 17/1 are rejected under 35 U.S.C. § 102(b) as being anticipated by Ikada U.S. 6,057,744.

Figs. 3 and 4 of Ikada disclose a surface acoustic wave (SAW) filter comprising: at least one piezoelectric substrate 31; at least one SAW resonator 25 is formed on the substrate; a longitudinal coupled mode type SAW filter 23 being a PDC reception filter in band 810 to 828 MHz (see col. 7, lines 11-12 vs. Applicants' spec. pg. 1, line 10), is formed on the substrate; the SAW resonator 25 and SAW filter 23 being cascaded (series coupled) together; the SAW resonator 25 is also connected to an inductor 28 having one end grounded; and wherein an attenuation band of the SAW resonator 25 (i.e. antiresonant frequency) is apart from (i.e. higher than) the pass band of the SAW filter 23 (see col. 4, lines 61-62) so as to attenuate frequencies in the transmitting band of 870 to 885 MHz (see Fig. 13 and col. 6, lines 58-60). Note that although Fig. 3 shows a diplexer, a duplexer with a transmit band and a receive band is disclosed (see col. 9, lines 15-18 and 34-36).

5. Claims 1, 13/1, 14/1 and 17/1 are rejected under 35 U.S.C. § 102(e) as being anticipated by Takamine U.S. 6,606,016.

Fig. 1 of Takamine discloses a SAW filter comprising: a piezoelectric substrate (see col. 7, lines 11-15); at least one SAW resonator 6 and 9 is formed on the substrate; a longitudinal coupled mode type SAW filter 2 (Fig. 2 and col. 7, lines 6-8) being a PDC reception filter (see col. 7, lines 30-35 and col. 6, lines 59-61), is formed on the substrate; the SAW resonator and SAW filter are cascaded together; the SAW resonator 6,9 is also connected to at least one inductor 11,13 having one end grounded;

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and an attenuation band of the SAW resonators 6 and 9 is higher than, and apart from, the pass band of the filter 2 so as to be in the transmission frequency band of the PDC system (see col. 9, lines 12-16 and 26-31). Regarding claims 13 and 14, see the last line of Table 1 and col. 8, lines 14-18, respectively.

6. Claims 1 and 9/1 are rejected under 35 U.S.C. § 102(b) as being anticipated by Kuroda et al. JP 10-107574.

Figs. 1-3 of Kuroda et al. disclose a SAW filter comprising: at least one piezoelectric substrate (see e.g. section [0012]); at least one SAW resonator 1b and 1c and a longitudinal coupled mode type SAW filter 1a cascaded together; the SAW resonator 1b and/or 1c is also capacitively connected to an inductor  $L_g$  (see the abstract and Fig. 1) having one end grounded; and wherein an attenuation band of the resonator is higher than and apart from (although close to, so as to not achieve at least 100MHz separation needed to attenuate and image frequency as described at sections [0003]-[0005]) the pass band of the SAW filter 1a. Regarding claim 9, the inductors  $L_g$  have their other ends capacitively connected to a connection portion between the SAW resonators 1b and 1c and the SAW filter 1a.

7. Claims 2, 3, 4, 13/2, 14/2 and 15 are rejected under 35 U.S.C. § 102(b) as being anticipated by Kawase et al. U.S. 6,339,365.

Regarding claims 2, 4 and 14, Figs. 1, 2 and 3B of Kawase et al. disclose a device which can be the SAW duplexer filter or the receiving filter 140 or the transmitting filter 210 in Fig. 9 (see col. 8, lines 54-60) comprising: at least one

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piezoelectric substrate 10 and 20; at least one SAW resonator (e.g. 11 which is a "resonant"/resonator filter, see col. 5, lines 37-38) on the at least one piezoelectric substrate 10; a longitudinal coupled mode type SAW filter (e.g. 22) formed on the at least one piezoelectric substrate 20; and wherein different electrode materials including composition and layer/lamination structure (see col. 3, lines 5-7), are used for the SAW resonator 11 and the SAW filter 22. Regarding claim 3, of electrodes formed of different materials, one inherently must have stronger power durability due to the inherently different electrical characteristics of different materials. Regarding claim 13, the thickness of the electrodes in the SAW resonator 11 and SAW filter 22 are also different (see e.g. col. 3, line 5). Regarding claim 15, see Fig. 2.

#### ***Allowable Subject Matter***

8. Claims 5-8, 9/5, 10, 11/1, 11/5, 12, 16, 17/2, 18/1, 18/2 and 19-25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Takamine U.S. 6,556,100 discloses a SAW filter like Applicants' Fig. 1. However, the high side of the pass band of the entire filter is formed by the highest resonant mode of the longitudinal coupled mode type filter and the inductance of the

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SAW resonator (see the abstract) such that the SAW resonator does not provide an attenuation band higher than and apart from the pass band of the longitudinal coupled mode filter.

Atomiya JP 7-66679 discloses that it is known to use SAW filters using longitudinally coupled mode filters and SAW resonators in duplexers with phase circuits (see Fig. 1 and Fig. 4).

Noguchi U.S. 6,380,827 (Fig. 1); Murai U.S. 5,717,367 (Fig. 12); Ushiroku et al. U.S. 5,694,096 (Fig. 6); Yatsuda U.S. 5,521,453 (Fig. 1); and Kuroda U.S. 6,366,179 (Fig. 1) each disclose SAW filters formed by a longitudinal coupled mode SAW filter cascaded with a SAW resonator.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barbara Summons whose telephone number is (571) 272-1771. The examiner can normally be reached on M-Th, M-Fr.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bob Pascal can be reached on (571) 271-1769. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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September 28, 2004



BARBARA SUMMONS  
PRIMARY EXAMINER